

# CS202: PROGRAMMING PARADIGMS & PRAGMATICS

Semester II, 2021 – 2022

Lab 2: Project – Tic-Tac-Toe!

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**Aim:** Write a program to handle the basics of a two-player game of Tic-Tac-Toe.

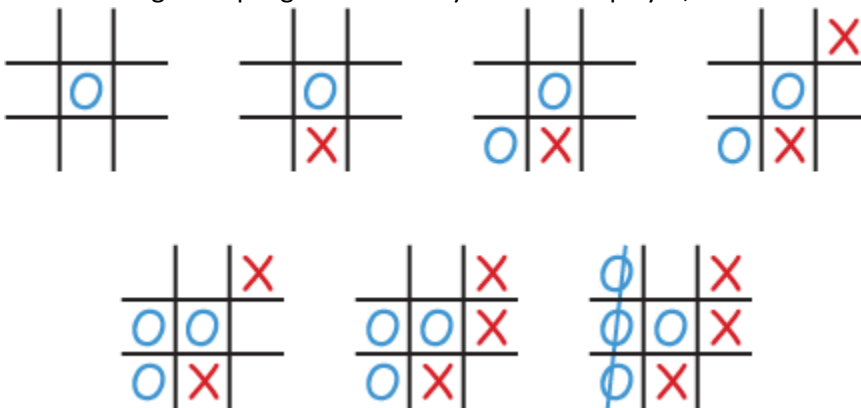
**Requirement:** Design the project using OOP in Java!

- **Let's get started!**

- Create a directory structure to hold your work for this course and all the subsequent labs:
  - Suggestion: `CS202/Lab2`

- **Introduction**

- Tic-tac-toe is a paper-&-pencil game for two players, X and O, who take turns marking the spaces in a 3×3 grid.
- The player who succeeds in placing three respective marks in a **horizontal**, **vertical**, or **diagonal** row wins the game.
- The following example game is won by the second player, O:



- **Game Simplified:**

- Need to design two versions of the game: Two players or Player Vs. Computer
  - The player always moves first and is X. The computer is O.
  - The only tricky part about the game is determining if a given person has won.
- Play continues until one player has scored three in a row or all squares have been filled with no winner.
- The players can play in only those squares that are not already occupied by either player.
- The program ends when the game is won by either player or the game is a draw.

- **Suggestions:**

- Whenever/wherever possible, your program should have classes that imitate real world objects
- Interaction between classes should only occur using the methods!
- Use Scanner class to Input the user's selection of letters.
- **First get a simple two player version of your game correct!! Then try the Computer Vs. Player version.**
- Your main function should be in the TicTacToe class

- Examples (SAMPLES ONLY – NOT REQUIRED TO REPLICATE!):

```

Welcome to Tic Tac Toe. Player is X, computer is O.
This is a new game. Board numbers are as follows:
 1 | 2 | 3
 4 | 5 | 6
 7 | 8 | 9
Enter your desired location [1-9] : 5
The computer picked: 3
  |  | O
  | X | 
  |  | 
Enter your desired location [1-9]: 8
The computer picked: 2
  | O | O
  | X | 
  | X | 
Enter your desired location [1-9]: 1
The computer picked: 7
 X | O | O
  | X | 
 O | X | 
Enter your desired location [1-9]: 9
You win!
 X | O | O
  | X | 
 O | X | X
New game [Y/N]? :

```

```

          Tic Tac Toe
Player 1 <X> - Player 2 <O>

  X | 2 | 3
  ---|---|---
  4 | 0 | 6
  ---|---|---
  X | 8 | 9

Player 2, enter a number:

```

```

This is the game of Tic Tac Toe.
You will be playing against the computer.
---|---|---
---|---|---
---|---|---
Enter X,Y coordinates for your move: 1,1
X | O | 
---|---|---
---|---|---
Enter X,Y coordinates for your move: 2,2
X | O | O
---|---|---
---|---|---
Enter X,Y coordinates for your move: 3,3
You won!
X | O | O
---|---|---
---|---|---
---|---|---

```

```

Turn 6
It's turn of Player 2
Line: 2
Column: 3

 X |  | X
 O | O | O
   |  | X
Player 2 won!
BUILD SUCCESSFUL (total time: 34 seconds)

```

```

(...a game already in progress)

 X O
O X X
 X O

'O', choose your location (row, column): 0 1

 X O O
O X X
 X O

'X', choose your location (row, column): 2 0

 X O O
O X X
X X O

The game is a tie.

```

- **Submitting your work:**

- All source files and class files as one tar-gzipped archive.
  - When unzipped, it should create a directory with your ID. Example: **2008CSB1001** (NO OTHER FORMAT IS ACCEPTABLE!!! Case sensitive!!!)
- Source files should include the following: (Case-Sensitive file names!!)
  - `TicTacToe.java / .class`
  - Any other supporting or required files
- ***Negative marks for any problems/errors in running your programs***
- *If any aspect of the game / rules are confusing, make an assumption and state it clearly in your **README** file!*
- **README** file should also have instructions on how to use/run your program!
- Submit/Upload to Google Classroom
- Marks Allocation
  - 2-Player Version [10 points]
  - Computer vs. Player Version [10 points]
  - Coding Style [2 points]
  - README [3 points]